

EIC Simulation Progress Report

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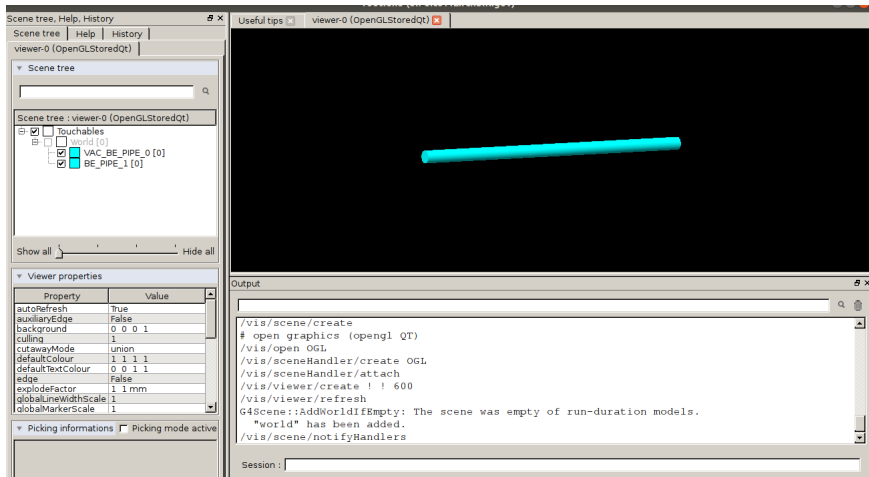


2 weeks ago Geant4 Progress

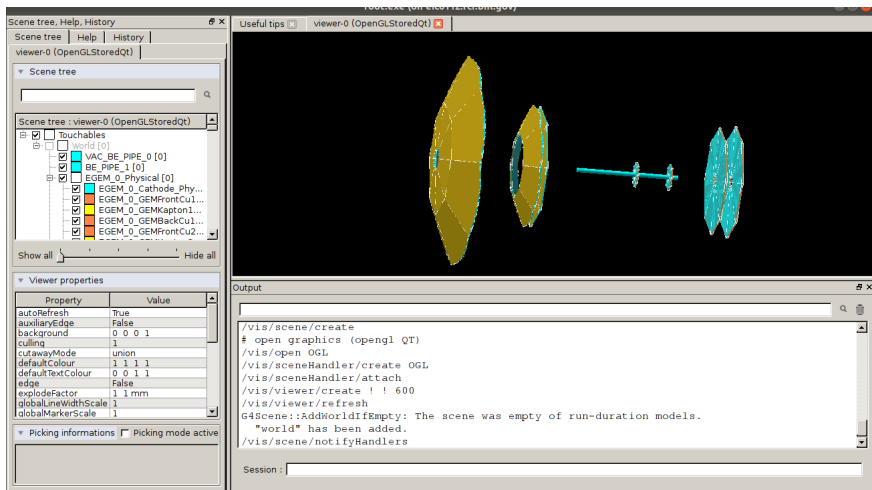
- ▶ Met with Matt Posik and he helped me start working in Fun4All
 - I learned how to connect to BNL via ssh and load different examples
 - My laptop crashes when I try to load too much of the detector at once
 - Still trying to load other examples from the tutorials online
 - Getting some errors so I may need to download some packages
- ▶ Got the tracker to print out the coordinates of the particle
 - Still working on saving the data
 - currently the program is overwriting itself and only writing data from the last generated plane
 - Going to talk with one of Alexanders colleagues (Jarda) on Monday



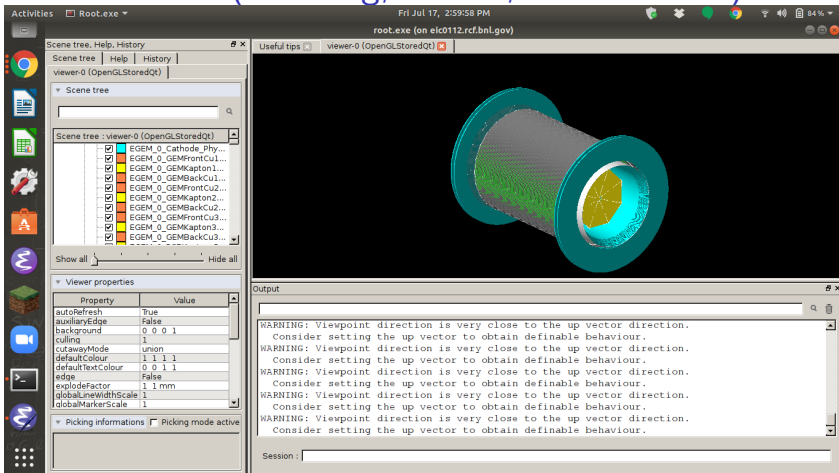
Fun4All Detector (Beam pipe)



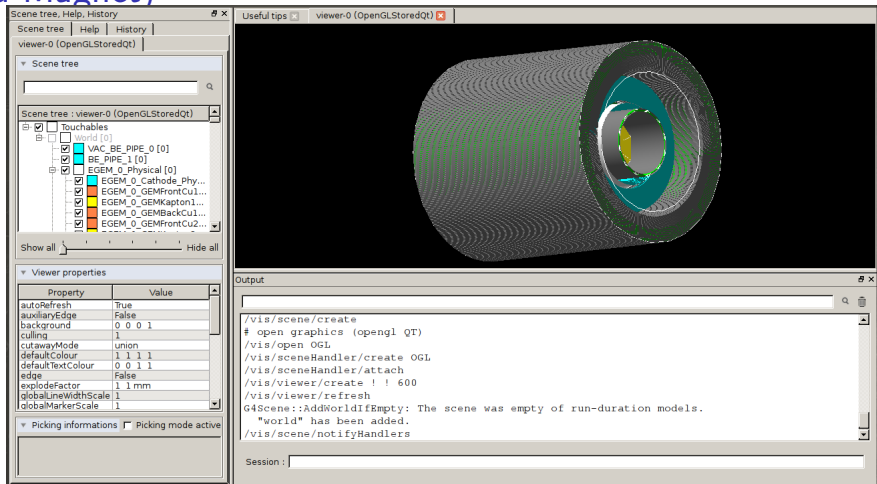
Fun4All Detector (EGEM FGEM)



Fun4All Detector (Tracking, CEMC, and HCALIN)



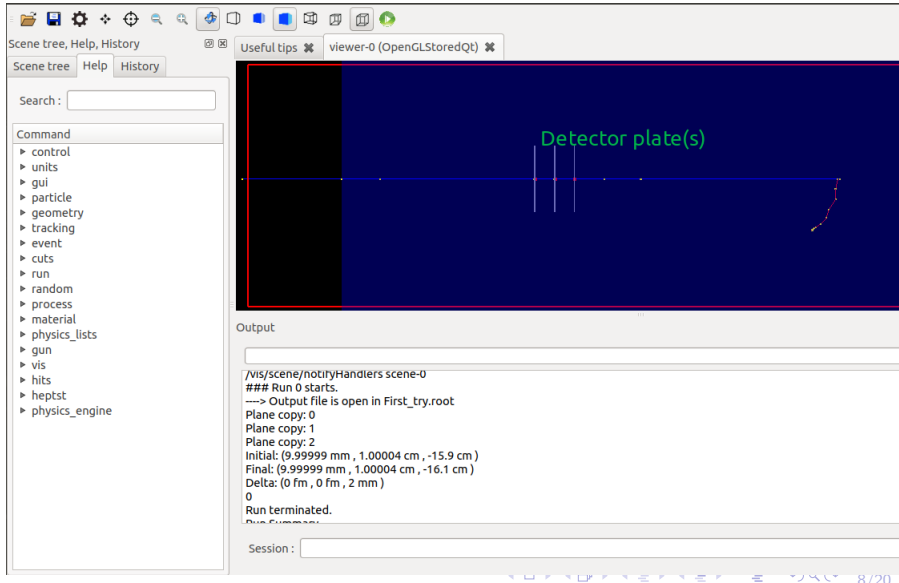
Fun4All Detector (HCALOUT, DIRC, RICH, AEROGEL, and Magnet)

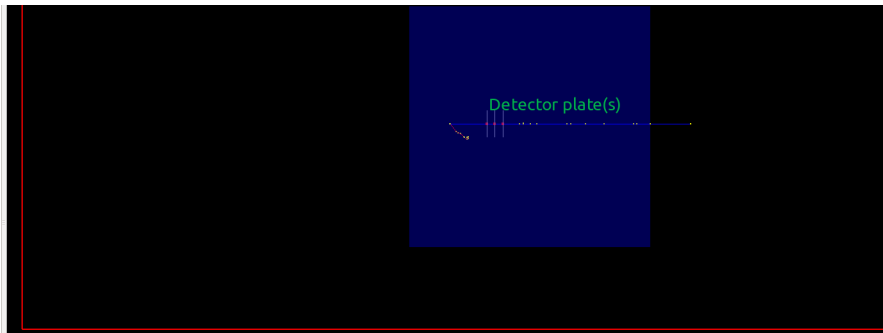


Geant4 Updates

- ▶ Started off trying to move event actions into the stepping actions
- ▶ Got the code to output the initial and final positions of the particle as it steps through the planes
- ▶ Now I need to fix my storage method
 - Trying to send hits to histograms and ntuples but only fills the final planes histograms
 - might switch to filling arrays instead
 - going to talk to Jarda today







Output

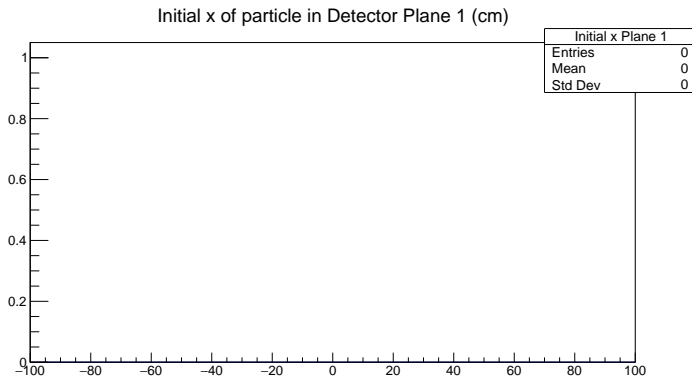
```
/vis/scene/notifyHandlers scene-0
### Run 0 starts.
--> Output file is open in First_try.root
Plane copy: 2
Initial: (9.99999 mm , 1 cm , -16.1 cm )
Final: (9.99999 mm , 1 cm , -15.9 cm )
Delta: (0 fm , 0 fm , 2 mm )
Plane copy: 1
Plane copy: 0
0
. . . . .
```

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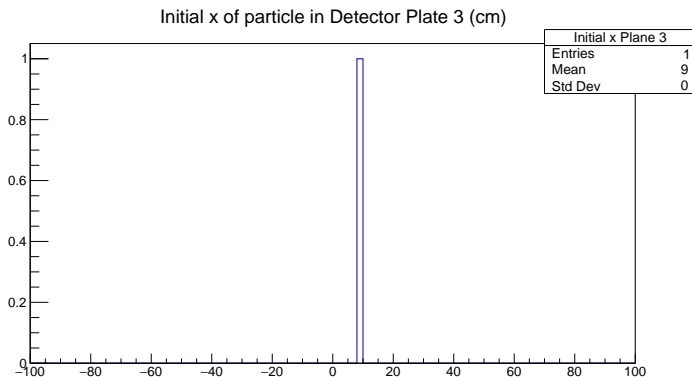
correct statements

```
-----
trackID: 1
PlateNb: 2
Initial Position: 0.999999 1 -16.1 cm
Final Position: 0.999999 1 -15.9 cm
-----
(9.99999, 10, -161)(9.99999, 10, -159) In plane 2
2
-----
trackID: 1
PlateNb: 1
Initial Position: 0.999987 0.999995 -13.1 cm
Final Position: 0.999986 0.999995 -12.9 cm
-----
(9.99987, 9.99995, -131)(9.99986, 9.99995, -129) In plane 1
-----
trackID: 1
PlateNb: 0
Initial Position: 0.999971 1 -10.1 cm
Final Position: 0.99997 1 -9.9 cm
-----
(9.99971, 10, -101)(9.9997, 10, -99) In plane 0
--> Histograms and ntuples are saved
***** WARNING! *****
* Display list limit reached in OpenGL.
* Continuing drawing WITHOUT STORING. Scene only partially refreshable.
* Current limit: 50000 primitives. Change with "/vis/ogl/set/displayListLimit".
*****
Session : 
```

x initial coordinate plane 1



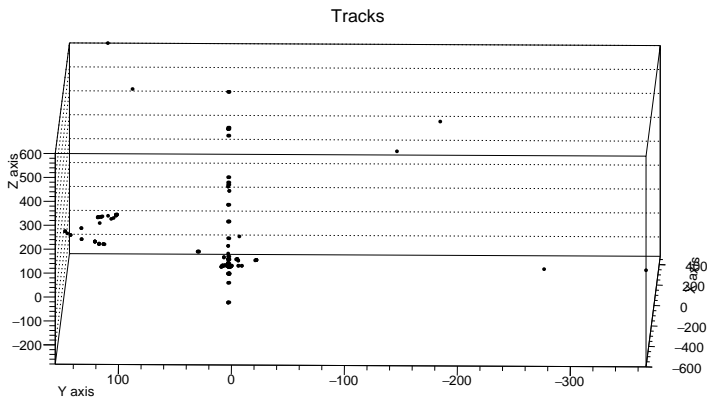
x initial coordinate plane 3



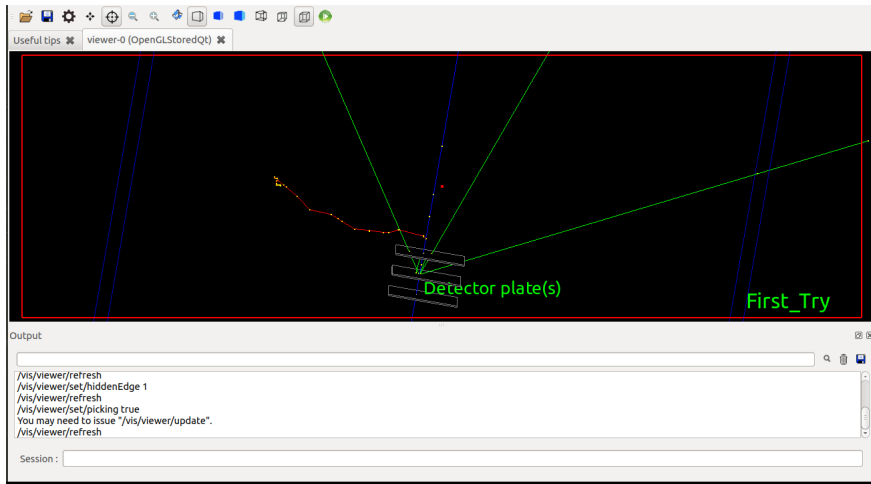
This Week's updates

- ▶ Fixed the simulation's data output to go to 3 branches and fill 3 histograms in a root file
- ▶ Made Root code to open this file and plot the hit coordinates in a 3D graph
 - Plots each x,y,z point and draws a line between each hit
 - This method doesn't work with secondaries, That is the next step
 - Draw by event number
- ▶ Doesn't draw points outside of one standard deviation of the average x and y values (doesn't work for slanted trajectories)
- ▶ Adds two extrema points to help with viewing the tracks
- ▶ Next week plan on sorting the hits by event ID and drawing that way to fix the lines
 - Then think of a way to organize by Primary and Secondary events to draw that way

Plotting every hit (not plane specific)

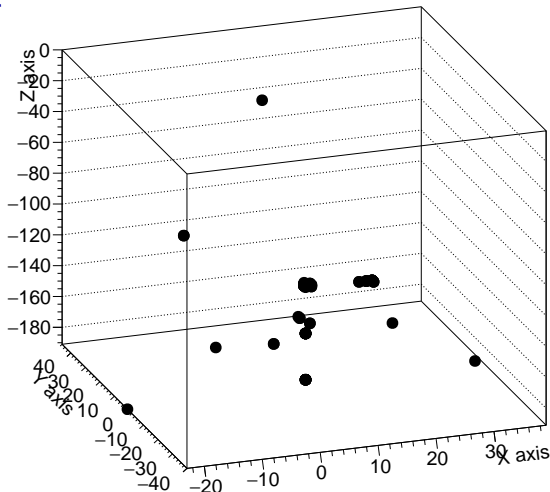


Geant4 Version



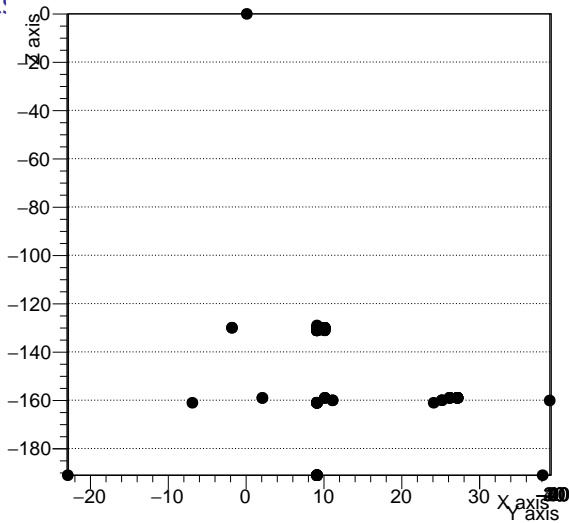
Hits

Tracks



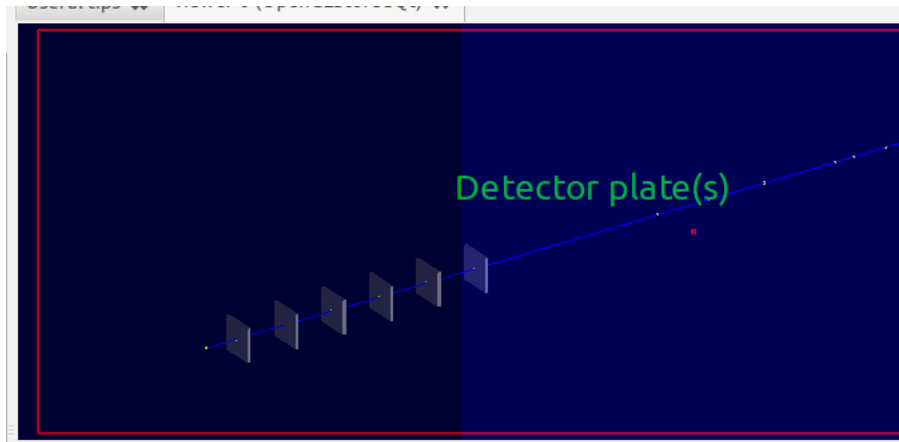
Hits

Tracks

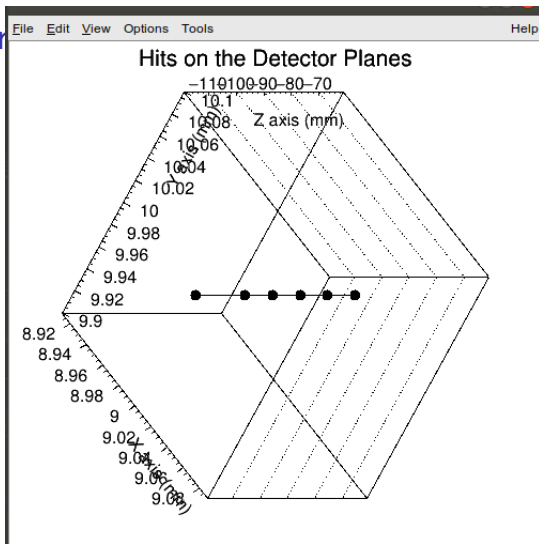


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Geant4 Version

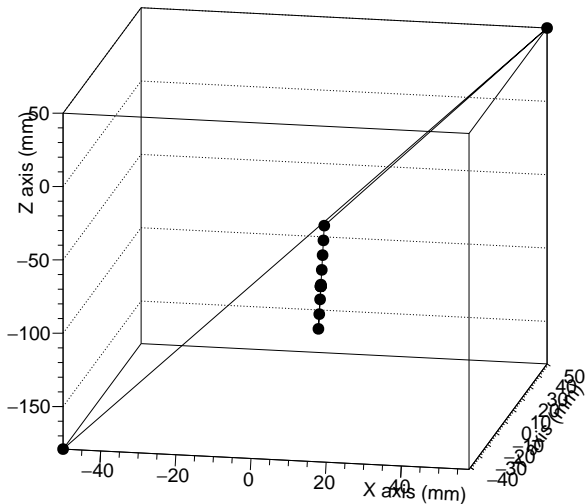


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Latest

Hits on the Detector Planes



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